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## PCR DIAGNOSIS OF PRRS VIRUS IN ORAL FLUIDS FROM WEANED DANISH PIGS

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### Introduction

Oral fluid testing has been suggested as an alternative diagnostic approach for surveillance of pathogens in swine herds<sup>3</sup>. In Denmark oral fluid has been used for detection of PCV2<sup>2</sup> and swine veterinarians are eager to use it for diagnosis of other pathogens. The aim of the present study was to evaluate the diagnostic performance of oral fluid testing for PRRSV by PCR under Danish conditions.

### Materials and Methods

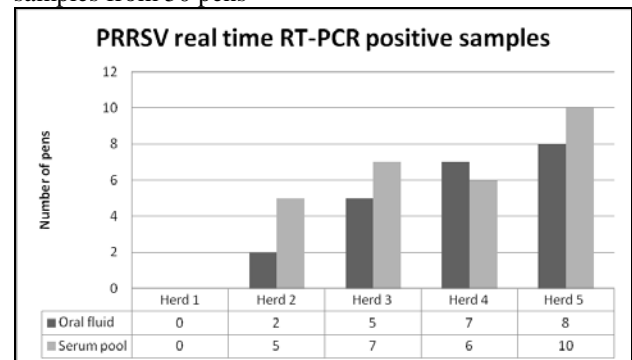
Five herds with PRRS positive nursery pigs were selected for sampling by convenience. Oral fluid and blood samples were collected from each of 10 pens in each of the 5 herds. Oral fluid was collected by providing 1 cotton rope in each selected pen for 30 minutes. Blood samples from 5 systematic randomly selected pigs in each pen were taken and the separated serum was pooled penwise. Different purification methods were tested in order to decrease the content of PCR inhibitors in the RNA extract of oral fluid. QIAamp Viral RNA Mini Kit (QIAGEN) was selected for purification of RNA from oral fluid and serum. Purified RNA was tested for PRRSV by real-time RT-PCR by a modified previously published assay<sup>1</sup>.

Overall agreement, diagnostic sensitivity and diagnostic specificity were calculated in order to evaluate the performance of oral fluid as test material in comparison with penwise pooled sera. PCR results from serum samples were considered as gold standard.

### Results

The detection of PRRSV in oral fluid and pooled serum is shown in figure 1 and 100% agreement was observed at the herd level. Pen level agreement between oral fluid and pooled serum samples for detection of PRRSV in the 50 pens is displayed in table 1. Overall agreement was 68%. The diagnostic sensitivity of oral fluid testing was 0.75 (95% CI= 0.55-0.89) and the diagnostic specificity of oral fluid testing was 0.95 (95% CI= 0.77-1.0).

**Figure 1.** Herd level detection of PRRSV based on samples from 50 pens



**Table 1.** 2x2 table of PRRSV real-time RT-PCR results, when testing pooled serum samples and oral fluid samples from 50 pens

	Serum pool positive	Serum pool negative	Total
Oral fluid positive	21	1	22
Oral fluid negative	7	21	28
Total	28	22	50

### Conclusions and Discussion

Agreement between oral fluid and serum testing at herd and pen level was promising. The present results indicate that oral fluid testing for PRRSV at pen level has a high diagnostic specificity and a somewhat lower, but acceptable diagnostic sensitivity. These findings suggest that oral fluid testing using the real-time RT-PCR procedure established in this study is applicable for PRRS surveillance and diagnosis under Danish conditions.

### References

1. Balka G et al.; 2009, J. Vir. Methods 158:41-45.
2. Leth S et al.; 2011, 6th Int. Symp. Emerg. and Re-Emerg. Pig Dis. 121.
3. Prickett J et al.; 2008, J. Vet. Diagn. Invest. 20:156-16.